WHAT IS CLAIMED IS:

1. An apparatus for computing a primary path within a network, the network including a plurality of nodes and a plurality of links, the apparatus comprising:

    means for identifying a path segment, the means for identifying the path segment being arranged to identify an unprotected path segment included in the primary circuit path, the unprotected path segment being defined to include a first unprotected link included in the plurality of links, the unprotected path segment further being defined to enable data to be transferred between a first node and a second node, the first node and the second node being included in the plurality of nodes; and

    means for validating, the means for validating being arranged to determine when the network includes a first alternate path segment that corresponds to the unprotected path segment, the first alternate path segment being arranged to enable data to be at least partially transferred between the first node and the second node, wherein when it is determined that the network includes the first alternate path segment, the first unprotected link is added to the primary circuit path.

2. An apparatus according to claim 1 further including:

    means for identifying a link, the means for identifying the link being arranged to identify the first unprotected link to be included in the primary circuit path.

3. An apparatus according to claim 2 wherein when it is determined that the network does not include the first alternate path segment, the first unprotected link is not included in the primary circuit path, and the means for identifying the link further identifies a second unprotected link included in the plurality of links to be included in the primary circuit link.

4. An apparatus according to claim 2 wherein the means for identifying the link is further arranged to add the first unprotected link to the primary circuit path when it is determined that the network includes the first alternate path segment.

5.   An apparatus according to claim 2 wherein the unprotected path segment includes at least a second unprotected link included in the plurality of links.

6.   An apparatus according to claim 2 wherein the means for validating is further arranged to determine when the first unprotected link is protectable.

7.   A method for creating a circuit path within a network, the network including a plurality of nodes and a plurality of links, the method comprising:

selecting a first unprotected link from the plurality of links;

identifying a first potential unprotected path segment, the first potential unprotected path segment including at least the first unprotected link, the first potential unprotected path segment further being arranged between a first node of the plurality of nodes and a second node of the plurality of nodes;

automatically determining when the first potential unprotected path segment has a corresponding first alternate path segment, the first alternate path segment being arranged between the first node and the second node;

adding the first unprotected link to the first potential unprotected path segment when it is determined that the first potential unprotected path segment has a corresponding first alternate path segment; and

designating the first potential unprotected path segment as an unprotected path segment of the circuit path when the first unprotected link is added to the first potential unprotected path segment.

8.   A method as recited in claim 7 wherein the first potential unprotected path segment includes at least a second unprotected link included in the plurality of links.

9.   A method as recited in claim 7 wherein when it is determined that the first potential unprotected path segment does not have a corresponding first alternate path segment, the first unprotected link is not added to the first potential unprotected path segment.

10.   A method as recited in claim 9 wherein when it is determined that the first potential unprotected path segment does not have a corresponding first alternate path segment, the method further includes:

5   selecting a second unprotected link from the plurality of links;

           identifying a second potential unprotected path segment, the second unprotected path segment including at least the second unprotected link, the second potential unprotected path segment further being arranged between the first node and the second node; and

10   automatically determining when the second potential unprotected path segment has a corresponding second alternate path segment, the second alternate path segment being arranged between the first node and the second node.

11.   A computer program product for creating a circuit path within a network, the

15   network including a plurality of nodes and a plurality of links, the computer program product comprising:

           computer code that causes a first unprotected link to be selected from the plurality of links;

           computer code that causes a first potential unprotected path segment to be

20   identified, the first potential unprotected path segment including at least the first unprotected link, the first potential unprotected path segment further being arranged between a first node of the plurality of nodes and a second node of the plurality of nodes;

           computer code that causes a determination of when the first potential unprotected path segment has a corresponding first alternate path segment, the first alternate path

25   segment being arranged between the first node and the second node;

           computer code that causes the first unprotected link to be added to the first potential unprotected path segment when it is determined that the first potential unprotected path segment has a corresponding first alternate path segment;

computer code that causes the first potential unprotected path segment to be designated as an unprotected path segment of the circuit path when the first unprotected link is added to the first potential unprotected path segment; and

a computer-readable medium that stores the computer codes.

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12.   A computer program product as recited in claim 11 wherein the first potential unprotected path segment includes at least a second unprotected link included in the plurality of links.

10   13.   A computer program product as recited in claim 11 wherein when it is determined that the first potential unprotected path segment does not have a corresponding first alternate path segment, the first unprotected link is not added to the first potential unprotected path segment.

15   14.   A computer program product as recited in claim 13 wherein when it is determined that the first potential unprotected path segment does not have a corresponding first alternate path segment, the computer program product further includes:

computer code that causes a second unprotected link to be selected from the plurality of links;

20   computer code that causes a second potential unprotected path segment to be identified, the second unprotected path segment including at least the second unprotected link, the second potential unprotected path segment further being arranged between the first node and the second node; and

computer code that causes a determination to be made regarding when the second

25   potential unprotected path segment has a corresponding second alternate path segment, the second alternate path segment being arranged between the first node and the second node.

15.   A computer program product as recited in claim 11 wherein the computer-

30   readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a

DVD, a computer disk, a tape drive, a computer memory, and a data signal embodied in a carrier wave.

16.   A system for routing a primary path, the system comprising:

computer code that causes a path segment to be identified, the computer code that causes the path segment to be identified being arranged to identify an unprotected path segment included in the primary circuit path, the unprotected path segment being defined to include a first unprotected link included in the plurality of links, the unprotected path segment further being defined to enable data to be transferred between a first node and a second node, the first node and the second node being included in the plurality of nodes;

computer code that validates, the computer code that validates being arranged to determine when the network includes a first alternate path segment that corresponds to the unprotected path segment, the first alternate path segment being arranged to enable data to be at least partially transferred between the first node and the second node, wherein when it is determined that the network includes the first alternate path segment, the first unprotected link is added to the primary circuit path;

a computer-readable medium that stores the computer codes; and

a processor that executes the computer codes.

17.   A system according to claim 16 further including:

computer code that causes a link to be identified, the computer code that causes the link to be identified being arranged to identify the first unprotected link to be included in the primary circuit path.

18.   An system according to claim 17 wherein when it is determined that the network does not include the first alternate path segment, the first unprotected link is not included in the primary circuit path, and the computer code that causes the link to be identified identifies a second unprotected link included in the plurality of links to be included in the primary circuit path.

19.   A method for creating a circuit path within a network, the network including a
plurality of nodes and a plurality of links, the method comprising:

identifying a first potential unprotected path segment, the first potential
unprotected path segment including at least a first unprotected link, the first potential

5   unprotected path segment further being arranged between a first node of the plurality of
nodes and a second node of the plurality of nodes;

determining when the first potential unprotected path segment has a
corresponding first alternate path segment, the first alternate path segment being arranged
between the first node and the second node; and

10   adding the first unprotected link to an unprotected segment of the circuit path
when it is determined that the first potential unprotected path segment has the
corresponding first alternate path segment.

20.   A method as recited in claim 19 wherein the first potential unprotected path

15   segment includes the unprotected segment of the circuit path.

21.   A method as recited in claim 19 wherein when it is determined that the first
potential unprotected path segment does not have the corresponding first alternate path
segment, the method further includes:

20   identifying a second potential unprotected path segment, the second potential
unprotected path segment including a second unprotected link;

determining when the second potential unprotected path segment has the
corresponding first alternate path segment, the first alternate path segment being arranged
between the first node and the second node; and

25   adding the second unprotected link to the unprotected segment of the circuit path
when it is determined that the second potential unprotected path segment has the
corresponding first alternate path segment.

22.   A method as recited in claim 21 wherein the second potential unprotected path

30   segment includes the unprotected segment of the circuit path.

23.   A method as recited in claim 19 wherein determining when the first potential unprotected path segment has the corresponding first alternate path segment includes substantially automatically determining when the first potential unprotected path segment

5   has the corresponding first alternate path segment.

24.   A computer program product for creating a circuit path within a network, the network including a plurality of nodes and a plurality of links, the computer program product comprising:

10   computer code that causes a first potential unprotected path segment to be identified, the first potential unprotected path segment including at least a first unprotected link, the first potential unprotected path segment further being arranged between a first node of the plurality of nodes and a second node of the plurality of nodes;

          computer code that causes a determination to be made regarding when the first

15   potential unprotected path segment has a corresponding first alternate path segment, the first alternate path segment being arranged between the first node and the second node;

          computer code that causes the first unprotected link to be added to an unprotected segment of the circuit path when it is determined that the first potential unprotected path segment has the corresponding first alternate path segment; and

20   a computer-readable medium that stores the computer codes.

25.   A computer program product as recited in claim 24 wherein the first potential unprotected path segment includes the unprotected segment of the circuit path.

25   26.   A computer program product as recited in claim 25 wherein when it is determined that the first potential unprotected path segment does not have the corresponding first alternate path segment, the computer program product further includes:

          computer code that causes a second potential unprotected path segment to be identified, the second potential unprotected path segment including a second unprotected

30   link;

computer code that causes a determination to be made regarding when the second potential unprotected path segment has the corresponding first alternate path segment, the first alternate path segment being arranged between the first node and the second node; and

5   computer code that causes the second unprotected link to be added to the unprotected segment of the circuit path when it is determined that the second potential unprotected path segment has the corresponding first alternate path segment.

27.   A computer program product as recited in claim 24 wherein the computer-

10 readable medium is one selected from the group consisting of a hard disk, a CD-ROM, a DVD, a computer disk, a tape drive, a computer memory, and a data signal embodied in a carrier wave.

28.   An apparatus for computing a primary path within a network, the network

15 including a plurality of nodes and a plurality of links, the apparatus comprising:

a path segment identifying device, the path segment identifying device being arranged to identify an unprotected path segment included in the primary circuit path, the unprotected path segment being defined to include a first unprotected link included in the plurality of links, the unprotected path segment further being defined to enable data to be

20 transferred between a first node and a second node, the first node and the second node being included in the plurality of nodes; and

a validating device, the validating device being arranged to determine when the network includes a first alternate path segment that corresponds to the unprotected path segment, the first alternate path segment being arranged to enable data to be at least

25 partially transferred between the first node and the second node, wherein when it is determined that the network includes the first alternate path segment, the first unprotected link is added to the primary circuit path.

29.   An apparatus according to claim 28 further including:

a link identifying device, the link identifying device being arranged to identify the first unprotected link to be included in the primary circuit path.

30. An apparatus according to claim 29 wherein when it is determined that the network does not include the first alternate path segment, the first unprotected link is not included in the primary circuit path, and the link identifying device identifies a second unprotected link included in the plurality of links to be included in the primary circuit path.

31. An apparatus according to claim 29 wherein the link identifying device is further arranged to add the first unprotected link to the primary circuit path when it is determined that the network includes the first alternate path segment.

32. An apparatus according to claim 29 wherein the validating device is further arranged to determine when the first unprotected link is protectable.

33. An apparatus according to claim 32 wherein the first unprotected link is arranged between a third node and a fourth node, and determining when the first unprotected link is protectable includes determining when at least one other unprotected links included in the plurality of links is suitable for transferring data between the third node and the fourth node.

34. An apparatus according to claim 29 wherein the unprotected path segment includes at least a second unprotected link included in the plurality of links.